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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,309	12/08/2003	Eduardo R. Mondragon-Parra	DP-309838	2196
22851	7590	04/13/2006	EXAMINER	
DELPHI TECHNOLOGIES, INC. M/C 480-410-202 PO BOX 5052 TROY, MI 48007			DUNWOODY, AARON M	
			ART UNIT	PAPER NUMBER
			3679	

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/730,309	MONDRAGON-PARRA ET AL.	
	Examiner	Art Unit	
	Aaron M. Dunwoody	3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5 and 8-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5 and 8-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/3/2006 has been entered.

Claim Objections

Claim 1 is objected to because of the following informalities:

Claim 1 change from "a said ball" to "said ball". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 5, 8, 10, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 4678453, Aucktor et al.

In regards to claim 1, Aucktor et al discloses a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member an outer surface defining a plurality of radially outwardly facing substantially longitudinal grooves in combination with a plurality of radially outwardly facing substantially helical grooves, the plurality of longitudinal grooves including at least one pair of substantially straight grooves extending substantially in parallel with the inner joint member longitudinal axis, the groove of each the pair of longitudinal grooves being located on opposite sides of the inner joint member longitudinal axis, the plurality of helical grooves including at least one pair of right-hand twist grooves and at least one pair of left-hand twist grooves, the grooves of each the pair of right-hand twist grooves being located on opposite sides of the inner joint member longitudinal axis, the grooves of each the pair of left-hand grooves being located on opposite sides of the inner joint member longitudinal axis;

an outer joint member having an inner surface disposed about the inner joint member outer surface, the outer joint member inner surface having a plurality of radially inwardly facing grooves defined in the inner surface; and

a plurality of balls disposed between the inner and outer joint members, the ball disposed in each the inner joint member radially outwardly facing groove and in a corresponding one of the outer joint member radially inwardly facing grooves, torque transmission between the inner and outer joint members being through the balls.

In regards to claim 2, Aucktor et al discloses the outer joint member has a longitudinal axis centered with respect to the outer joint member and the plurality of radially inwardly facing grooves includes a plurality of inwardly facing substantially

longitudinal grooves in combination with a plurality of radially inwardly facing substantially helical grooves, the plurality of inwardly facing longitudinal grooves including at least one pair of substantially straight grooves extending substantially in parallel with the outer joint member longitudinal axis, the grooves of each the pair of radially inwardly facing longitudinal grooves being located on opposite sides of the outer joint member longitudinal axis, the plurality of radially inwardly facing helical grooves including at least one pair of right-hand twist grooves and at least one pair of left-hand twist grooves, the grooves of each the pair of radially inwardly facing right-hand twist grooves being located on opposite sides of the outer joint member longitudinal axis, the grooves of each the pair of the radially inwardly facing left-hand twist grooves being located on opposite sides of the outer joint member longitudinal axis; and

wherein each the pair of radially outwardly facing longitudinal grooves is engaged with a the pair of radially inwardly facing longitudinal grooves through a pair of the balls.

In regards to claim 4, Aucktor et al discloses each of the substantially helical grooves is located between two of the substantially longitudinal grooves.

In regards to claim 5, Aucktor et al discloses the substantially helical grooves and the substantially longitudinal grooves being disposed in alternating relation along the outer surface of the inner joint member.

In regards to claim 8, Aucktor et al discloses a first helical groove is located between second and third helical grooves, the second and the third helical grooves extending in opposite rotational direction relative to the first helical groove.

In regards to claim 10, Aucktor et al discloses a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member and an outer surface defining a plurality of radially outwardly facing longitudinal grooves in combination with a plurality of radially outwardly facing substantially helical grooves, wherein each the helical groove curves in the same rotational direction as a corresponding helical groove disposed on an opposite side of the longitudinal axis does, the plurality of radially outwardly facing substantially helical grooves including a pair of right-hand grooves and a pair of left-hand grooves; and

a plurality of balls (6) individually disposed in and movable along the plurality of radially outwardly facing substantially helical grooves; and

an outer joint member having an inner surface defining a plurality of radially inwardly facing substantially helical grooves wherein the plurality of radially outwardly facing substantially helical grooves of the inner joint member cooperate with the plurality of radially inwardly facing substantially helical grooves of the outer joint member forming a plurality of passages guiding movement of the plurality of balls and wherein the plurality of balls transmit torque between the inner joint member and the outer joint member.

In regards to claim 21, Aucktor et al discloses a cage (7) surrounding the inner joint and defining a plurality of windows wherein each of the plurality of balls individually is disposed in one of the plurality of windows, the plurality of windows including short

windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves.

In regards to claim 22, Aucktor et al discloses a pair of radially outwardly facing right-hand twist grooves are engaged with a the pair of radially inwardly facing left-hand twist grooves a pair of the balls, and a the pair of radially outwardly facing left-hand twist grooves are engaged with a the pair of radially inwardly facing right-hand twist grooves through a pair of the balls.

Claims 1, 2, 4, 5, 8-22 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by DE 3818730.

In regards to claim 1, DE 3818730 discloses a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member an outer surface defining a plurality of radially outwardly facing substantially longitudinal grooves in combination with a plurality of radially outwardly facing substantially helical grooves, the plurality of longitudinal grooves including at least one pair of substantially straight grooves extending substantially in parallel with the inner joint member longitudinal axis, the groove of each the pair of longitudinal grooves being located on opposite sides of the inner joint member longitudinal axis, the plurality of helical grooves including at least one pair of right-hand twist grooves and at least one pair of left-hand twist grooves, the grooves of each the pair of right-hand twist grooves being located on opposite sides of the inner joint member longitudinal axis, the grooves

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of each the pair of left-hand grooves being located on opposite sides of the inner joint member longitudinal axis;

an outer joint member having an inner surface disposed about the inner joint member outer surface, the outer joint member inner surface having a plurality of radially inwardly facing grooves defined in the inner surface; and

a plurality of balls disposed between the inner and outer joint members, the ball disposed in each the inner joint member radially outwardly facing groove and in a corresponding one of the outer joint member radially inwardly facing grooves, torque transmission between the inner and outer joint members being through the balls.

In regards to claim 2, DE 3818730 discloses the outer joint member has a longitudinal axis centered with respect to the outer joint member and the plurality of radially inwardly facing grooves includes a plurality of inwardly facing substantially longitudinal grooves in combination with a plurality of radially inwardly facing substantially helical grooves, the plurality of inwardly facing longitudinal grooves including at least one pair of substantially straight grooves extending substantially in parallel with the outer joint member longitudinal axis, the grooves of each the pair of radially inwardly facing longitudinal grooves being located on opposite sides of the outer joint member longitudinal axis, the plurality of radially inwardly facing helical grooves including at least one pair of right-hand twist grooves and at least one pair of left-hand twist grooves, the grooves of each the pair of radially inwardly facing right-hand twist grooves being located on opposite sides of the outer joint member longitudinal axis, the

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grooves of each the pair of the radially inwardly facing left-hand twist grooves being located on opposite sides of the outer joint member longitudinal axis; and

wherein each the pair of radially outwardly facing longitudinal grooves is engaged with a the pair of radially inwardly facing longitudinal grooves through a pair of the balls.

In regards to claim 4, DE 3818730 discloses each of the substantially helical grooves is located between two of the substantially longitudinal grooves.

In regards to claim 5, DE 3818730 discloses the substantially helical grooves and the substantially longitudinal grooves are disposed in alternating relation along the outer surface of the inner joint member.

In regards to claim 8, DE 3818730 discloses a first helical groove extends between second and third helical grooves extending in opposite rotational relation to the first helical groove.

In regards to claim 9, DE 3818730 discloses the plurality of radially outwardly facing grooves includes eight grooves.

In regards to claim 10, DE 3818730 discloses a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member and an outer surface defining a plurality of radially outwardly facing longitudinal grooves in combination with a plurality of radially outwardly facing substantially helical grooves, wherein each the helical groove curves in the same rotational direction as a corresponding helical groove disposed on an opposite side of

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the longitudinal axis does, the plurality of radially outwardly facing substantially helical grooves including a pair of right-hand grooves and a pair of left-hand grooves; and

a plurality of balls individually disposed in and movable along the plurality of radially outwardly facing grooves; and

an outer joint member having an inner surface defining a plurality of radially inwardly facing substantially helical grooves wherein the plurality of radially outwardly facing substantially helical grooves of the inner joint member cooperate with the plurality of radially inwardly facing substantially helical grooves of the outer joint member forming a plurality of passages guiding movement of the plurality of balls and wherein the plurality of balls transmit torque between the inner joint member and the outer joint member.

In regards to claim 11, DE 3818730 discloses the inner joint member includes a first end and a second end and the grooves of the plurality of radially outwardly facing grooves extend from the first end to the second end and include four substantially longitudinal grooves located along the outer surface at ninety degrees from one another and four substantially helical grooves individually located along the outer surface and between two of the four substantially longitudinal grooves and wherein each of the substantially helical grooves extends in an opposite rotational direction relative to the rotational direction in which the two helical grooves adjacent thereto extend.

In regards to claim 12, DE 3818730 discloses a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member and a first end and a second end and an outer surface defining a plurality of radially outwardly facing grooves extending from the first end to the second end including four substantially longitudinal grooves disposed along the outer surface ninety degrees from one another and four substantially helical grooves, each helical groove disposed along the outer surface between two of the four substantially longitudinal grooves, two of the helical grooves extending in a right-hand rotational direction and disposed on opposite sides of the longitudinal axis, two of the helical grooves extending in a left-hand rotational direction and disposed on opposite sides of the longitudinal axis;

a plurality of balls individually disposed in and movable along the plurality of radially outwardly facing grooves;

a cage surrounding the inner joint member and defining a plurality of windows wherein each of the plurality of balls individually pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves; and

an outer joint member surrounding the cage and having a third end and a fourth end and an inner surface defining a plurality of radially inwardly facing grooves extending from the third end to the fourth end including four substantially longitudinal grooves disposed along the inner surface ninety degrees from one another and four substantially helical grooves individually disposed along the inner surface between two of the four substantially longitudinal grooves and wherein the plurality of outwardly

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facing grooves of the inner joint member cooperate with the plurality of inwardly facing grooves of the outer joint member forming a plurality of passages guiding movement of the plurality of balls.

In regards to claim 13, DE 3818730 discloses the substantially helical grooves and the substantially longitudinal grooves are disposed in alternating relation along the outer surface of the inner joint member.

In regards to claim 14, DE 3818730 discloses each of the helical grooves of the inner joint member and each of the helical grooves of the outer joint member extends in opposite relation to two adjacent helical grooves.

In regards to claim 15, DE 3818730 discloses at least one of the plurality of passages is defined by a first helical groove of the inner joint member and a second helical groove of the outer joint member, and wherein the first and second helical grooves extend in opposite rotational direction relative to one another.

In regards to claim 16, DE 3818730 discloses the inner joint member is further defined as having four longitudinal grooves spaced substantially ninety degrees apart from one another about the centered longitudinal axis.

In regards to claim 17, DE 3818730 discloses the plurality of radially outwardly facing substantially helical grooves is further defined as including two right-hand helical grooves spaced substantially one hundred and eighty degrees apart from one another about the centered longitudinal axis.

In regards to claim 18, DE 3818730 discloses the plurality of radially outwardly facing substantially helical grooves is further defined as including two left-hand helical

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grooves spaced substantially one hundred and eighty degrees apart from one another about the centered longitudinal axis.

In regards to claim 19, DE 3818730 discloses each of the two left-hand helical grooves is spaced substantially ninety degrees apart from each of the two right-hand grooves about the centered longitudinal axis.

In regards to claim 20, DE 3818730 discloses the plurality of radially outwardly facing substantially helical grooves is further defined as including the same number of left-hand grooves and right-hand grooves.

In regards to claim 21, DE 3818730 discloses a cage (4) surrounding the inner joint and defining a plurality of windows wherein each of the plurality of balls individually is disposed in one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves.

In regards to claim 22, DE 3818730 discloses a pair of radially outwardly facing right-hand twist grooves are engaged with a the pair of radially inwardly facing left-hand twist grooves a pair of the balls, and a the pair of radially outwardly facing left-hand twist grooves are engaged with a the pair of radially inwardly facing right-hand twist grooves through a pair of the balls.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aucktor et al in view of US patent 5685777, Schwarzler.

In regards to claim 3, Aucktor et al discloses the claimed invention except for eight grooves of the plurality of radially outwardly facing grooves extending parallel to one another. Schwarzler teaches eight grooves (20, 21) of the plurality of radially outwardly facing grooves extending parallel to one another. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide four grooves of the plurality of radially outwardly facing grooves extending parallel to one another, since duplicating the components of a prior art device is a design consideration within the skill of the art. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

In regards to claim 11, Aucktor et al in view of Schwarzler disclose the inner joint member includes a first end and a second end and the grooves of the plurality of radially outwardly facing grooves extend from the first end to the second end and include four substantially longitudinal grooves located along the outer surface at ninety degrees from one another and four substantially helical grooves individually located along the outer surface and between two of the four substantially longitudinal grooves and wherein each of the substantially helical grooves extends in an opposite rotational

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direction relative to the rotational direction in which the two helical grooves adjacent thereto extend.

In regards to claim 12, Aucktor et al in view of Schwarzler disclose a stroking ball-type constant velocity joint comprising:

an inner joint member having a longitudinal axis centered with respect to the inner joint member and a first end and a second end and an outer surface defining a plurality of radially outwardly facing grooves extending from the first end to the second end including four substantially longitudinal grooves disposed along the outer surface ninety degrees from one another and four substantially helical grooves, each helical groove disposed along the outer surface between two of the four substantially longitudinal grooves, two of the helical grooves extending in a right-hand rotational direction and disposed on opposite sides of the longitudinal axis, two of the helical grooves extending in a left-hand rotational direction and disposed on opposite sides of the longitudinal axis;

a plurality of balls individually disposed in and movable along the plurality of radially outwardly facing grooves;

a cage surrounding the inner joint member and defining a plurality of windows wherein each of the plurality of balls individually pierces one of the plurality of windows, the plurality of windows including short windows adjacent the substantially longitudinal grooves and long windows adjacent the substantially helical grooves; and

an outer joint member surrounding the cage and having a third end and a fourth end and an inner surface defining a plurality of radially inwardly facing grooves

extending from the third end to the fourth end including four substantially longitudinal grooves disposed along the inner surface ninety degrees from one another and four substantially helical grooves individually disposed along the inner surface between two of the four substantially longitudinal grooves and wherein the plurality of outwardly facing grooves of the inner joint member cooperate with the plurality of inwardly facing grooves of the outer joint member forming a plurality of passages guiding movement of the plurality of balls.

In regards to claim 13, Aucktor et al in view of Schwarzler disclose the substantially helical grooves and the substantially longitudinal grooves being disposed in alternating relation along the outer surface of the inner joint member.

In regards to claim 14, Aucktor et al in view of Schwarzler disclose each of the helical grooves of the inner joint member and each of the helical grooves of the outer joint member extending in opposite relation to two adjacent helical grooves.

In regards to claim 15, Aucktor et al in view of Schwarzler disclose at least one of the plurality of passages is defined by a first helical groove of the inner joint member and a second helical groove of the outer joint member, and wherein the first and second helical grooves extend in opposite rotational direction relative to one another.

In regards to claim 16, Aucktor et al in view of Schwarzler disclose the inner joint member is further defined as having four longitudinal grooves spaced substantially ninety degrees apart from one another about the centered longitudinal axis.

In regards to claim 17, Aucktor et al in view of Schwarzler disclose the plurality of radially outwardly facing substantially helical grooves is further defined as including two

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right-hand helical grooves spaced substantially one hundred and eighty degrees apart from one another about the centered longitudinal axis.

In regards to claim 18, Aucktor et al in view of Schwarzler disclose the plurality of radially outwardly facing substantially helical grooves is further defined as including two left-hand helical grooves spaced substantially one hundred and eighty degrees apart from one another about the centered longitudinal axis.

In regards to claim 19, Aucktor et al in view of Schwarzler disclose each of the two left-hand helical grooves is spaced substantially ninety degrees apart from each of the two right-hand grooves about the centered longitudinal axis.

In regards to claim 20, Aucktor et al in view of Schwarzler disclose the plurality of radially outwardly facing substantially helical grooves is further defined as including the same number of left-hand grooves and right-hand grooves.

Response to Arguments

Applicant failed to provide arguments with the RCE filed 4/3/2006.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron M. Dunwoody whose telephone number is 571-272-7080. The examiner can normally be reached on 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on 571-272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Aaron M Dunwoody
Primary Examiner
Art Unit 3679

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